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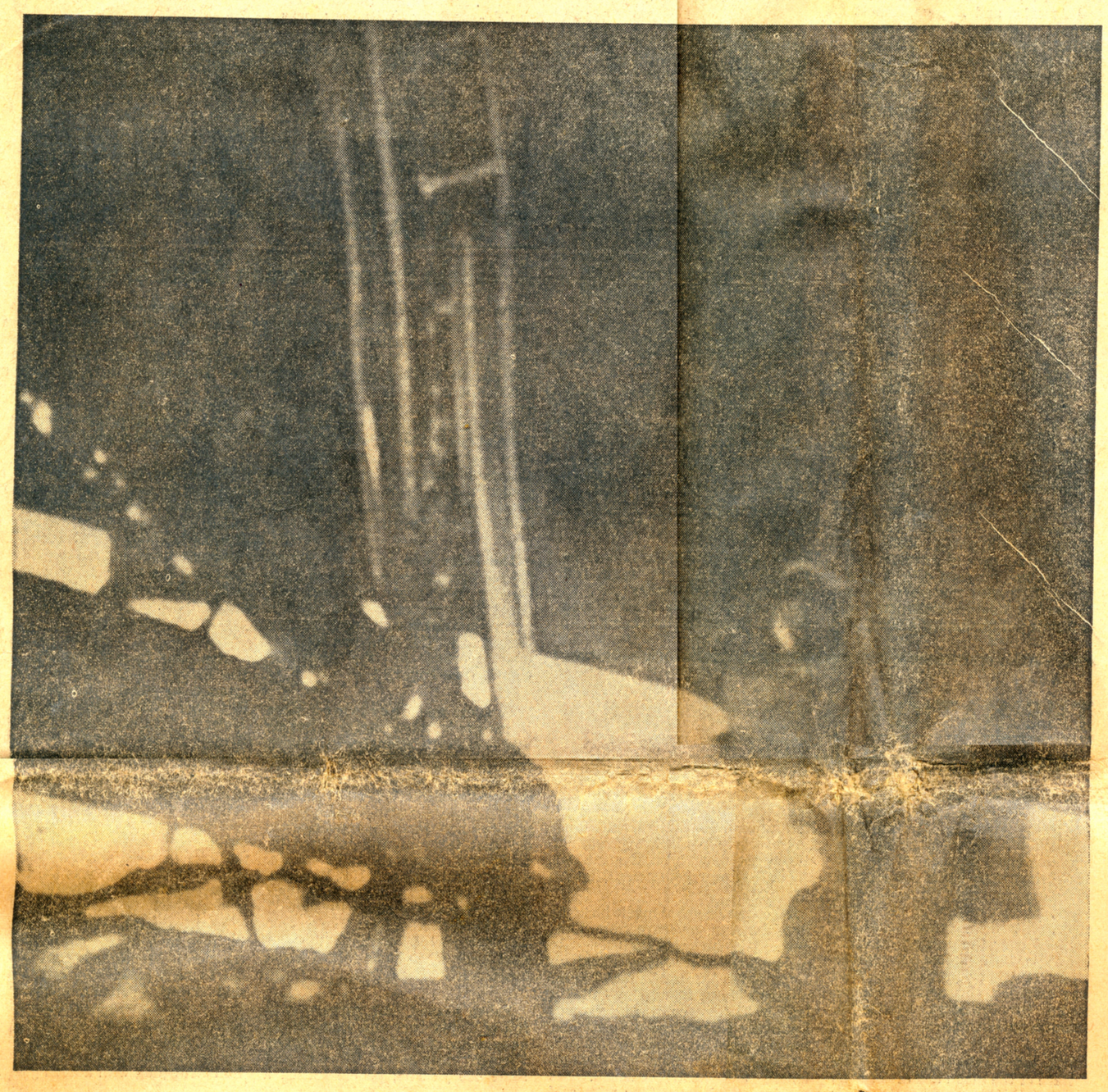
MAN WALKS ON THE MOON

'Small Step for Man...Giant Leap for Mankind'



TAKING A WALK—Neil A. Armstrong, wearing life-support backpack, steps on lunar surface after descending the ladder of the spacecraft.

PLANTING THE FLAG—Armstrong and Edwin E. Aldrin Jr. setting Stars and Stripes on the moon. Reflecting light, left, is a landing leg. (UPI Wirephoto)

Armstrong Beams His Words to Earth After Testing Surface

BY MARVIN MILES AND RUDY ABRAMSON
Times Staff Writers

HOUSTON—U.S. astronauts stepped onto the surface of the moon Sunday and explored its bleak, forbidding crust in man's first visit to another celestial body.

Apollo 11 Commander Neil A. Armstrong climbed slowly down the ladder from the spaceship Eagle, and became the first man to set foot on the lunar surface.

As Armstrong swung his left boot to the surface of the moon at 7:56 p.m., PDT, he gave millions of spellbound television viewers words sure to live in history:

"That's one small step for man ... one giant leap for mankind."

Nearly seven hours earlier, Armstrong had averted possible disaster by taking full manual control of the vehicle on landing, selecting a safe spot for man's first landing on the moon.

Much of the civilized world watched and listened as Armstrong and fellow explorer Edwin E. Aldrin Jr., who followed him down the steps about 20 minutes later, collected rocks which may reveal the oldest secrets of the solar system.

Waiting and listening in lunar orbit was the third member of the Apollo crew, command module pilot Michael Collins.

As he took his first steps on the lunar surface, Armstrong could be seen in remarkably clear television pictures taken by a camera attached to the lunar module descent stage. He described what he found.

Surface 'Appears Fine-grained'

He said the surface "appears fine-grained, almost like a powder. I can kick it up loosely with my foot. I only go in maybe an eighth of an inch."

Armstrong said the lunar module's round footpads penetrated the surface only one to two inches.

At first the black-and-white pictures were silhouettes, but then as Armstrong moved away from the ladder his bulky life support pack could be discerned. In almost no time Armstrong was moving around the surface rapidly—quickly adapting to the lunar environment.

The spacecraft commander went to work on his first major assignment, the gathering of a contingency sample of lunar soil. This is a "quick grab" of sample material, about two pounds, retrieved with a butterfly net-type device.

The contingency sample was planned to assure that at least some lunar material would be brought back to earth if for any reason the astronauts had to launch from the moon in an emergency.

At one point he said he had penetrated the surface six to eight inches with the sampler and told Mission Control, "I'm sure I could push it in further."

Aldrin was down on the surface of the moon at 8:16 p.m. with an athletic drop of what appeared to be about three feet. He then immediately practiced several jumps to determine the effect of the moon's weight gravity on his balance and coordination.

Mission Control here asked Armstrong if he foresaw any difficulty transferring equipment back and forth between the surface and the lunar module cabin in the top stage of the spacecraft and his cryptic reply was "Negative."

TV Audience Sees Both Men

As soon as Aldrin was on the surface, both men could be seen by the television audience working near the ladder which was mounted on the lander's forward leg.

One of the first tasks of the two men after Armstrong gathered the contingency sample and stowed it in a bag in his spacesuit pocket, was to make a cursory examination of the spacecraft, particularly its landing legs and shocks. He had some trouble in stowing the sample because the suit, bulky with many layers of material and 3.5 pounds per square inch pressurization, was stiff and he could not tell if the pocket was open. He had to ask for Aldrin's assistance.

Aldrin's first comment after reaching the surface was that the rocks felt quite "slippery."

Both astronauts wore their heavy gold sunshields pulled down over their fishbowl helmets and their faces could not be discerned.

In no time it seemed that both men were acclimated entirely to the

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TALKS TO ASTRONAUTS

Heavens Have Become Part of Man's World, Nixon Says

BY STUART H. LOORY
Times Staff Writer

WASHINGTON — For two minutes Sunday night, President Nixon spoke via radiotelephone to his farthest flung minions—American astronauts in the moon's Sea of Tranquility—and told them:

"Because of what you have done, the heavens have become part of man's world and, as you talk to us from the Sea of Tranquility, it inspires us to redouble our efforts to bring peace and tranquility to the earth."

Those were the official words of the President of the United States, speaking from the august Oval Office of the White House.

A few minutes earlier, Mr. Nixon, like television viewers all over the world, sat in a smaller, private, more informal office and watched astronaut Neil A. Armstrong climb down from his moon landing ship to set the first human feet on the moon.

The President, his eyes fixed on the set, said:

"It's an unbelievable thing. Fantastic."

Col. Frank Borman, who commanded the Apollo 8 Christmastime voyage around the moon, was with the President when Armstrong took his walk. He provided the President with a running commentary and explained the technicalities of the mission.

Why, Mr. Nixon wanted to know, did pressure have to be so low in the cabin before the hatch could be opened?

Because the hatch opened inward and the job of opening it was made difficult by the pressure pushing outward from the cabin against the vacuum that surrounds the moon, Borman explained.

"I had a sense that the President

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U.S. Called Fortunate in Unmanned Landings

Official Notes Rough Terrain, Says Eagle Might Have Had Trouble Without a Pilot

BY JACK NELSON
Times Staff Writer

HOUSTON—The fact that Neil A. Armstrong had to maneuver the Eagle away from rough terrain toward a smoother landing site indicated that the United States has been "extremely lucky" in making successful unmanned lunar landings, Dr. Thomas O. Paine said Sunday.

Dr. Paine, administrator of the National Aeronautics and Space Administration, said that as officials at the Manned Spacecraft Center here "looked down at the terrain they were originally headed down into — which we thought was a safe place to land — it certainly indicated that we might indeed have had considerable difficulty if it had been a completely programmed landing."

He said the officials were "more disappointed than surprised" at how rugged the astronauts found the moon's surface because "we knew the possibility of considerable roughness. That's why in training we emphasized the astronauts' flying the last few feet down and selecting a safe landing position."

The Eagle's landing site put the astronauts in "excellent position for the rest of the mission," said Paine, who spoke at a press conference here shortly after the lunar touchdown.

Difficulty With Antenna

Asked about any anxiety at the space control center when the Eagle reported difficulty with its high-gain antenna early in its descent, Paine said, "The general feeling was, 'Would you guys please roll over 10 degrees so we can get a better lock.' I wouldn't say we weren't anxious, I don't think we were anxious about that alone, we were very anxious."

Paine said that although Armstrong and Edwin E. Aldrin Jr. kept their voices under "tight control," medical data indicated their emotion "was running very high as it was in all of us."

Although space officials here have not discussed a permanent name for the Eagle's landing site, Paine pointed out that it had been called Tranquility Base in communications since touching down and added, "If the past is any prelude to the future, that is probably what it will wind up being called."

Immediately after the lunar touchdown, Paine telephoned the White House where President Nixon and astronaut Frank Borman were watching the historic event on television and told him:

"Mr. President, it is my honor on behalf of the entire NASA team to report to you that the Eagle has landed on the Sea of Tranquility and our astronauts are safe and looking forward to starting the exploration of the moon."

Paine said he and Mr. Nixon "discussed the gripping excitement and wonder that had been present in the White House and in Mission Control during the final moments of this historic touchdown."

He emphasized to the President, he said, "the fact that we still had many difficult steps ahead of us in the Apollo 11 mission, but at the same time a giant step had been made . . ."

Mr. Nixon asked him to convey to the NASA team and its associated industrial and university associates his personal congratulations on the success of the initial lunar landing and expressed good wishes for the continued success of the mission.

Speaks With Great Excitement

"His mood as we talked and my own mood . . . was one of considerable tension relieved," Paine said. "He spoke with a great deal of excitement and I would say almost awe in his voice. We both very soberly discussed that we still had a great deal of difficult operations ahead of us in the mission."

Paine said it would not be right for him to express his own personal feelings about the historic landing and added, "We have clearly entered a new era and I think it means a different thing to each of us."

"The voices that we hear coming back from these brave men on the surface of the moon are still hard to believe and yet it's true," he said. "I think that this success is something that has raised the spirits of men around the world and caused us to pause and ponder its meaning which only history in the final analysis will reveal to us."

He said it was significant that two days ago the Soviet Union gave the United States flight information on this moon-circling Luna 15. He called the act an "unprecedented cooperative movement" and said it "bodes well for the future of mankind's exploration of our sister planets."

'Very Crude Form of Travel'

Paine said the lunar landing demonstrated "a very crude and preliminary form of travel between the earth and other bodies. As we look at the things we have on the drawing board, as we look at the dreams of the engineers for the future, it seems very clear to me that there are two basic factors that have to be answered. First is whether or not we can attain the kind of cost and kind of reliability in space flight that we now have in earth flight and I'm quite convinced that we can."

The second question, he said, is that even if men do develop practical ways of travel to the moon and eventually beyond, "will men indeed wish to do so and will they wish to found small research stations and perhaps eventually permanent colonies . . . and it seems to me that the history of mankind is that they certainly will."

The significance of the moon landing, he said, "is that mankind is indeed going to establish bases of abode outside of his home planet, the earth."

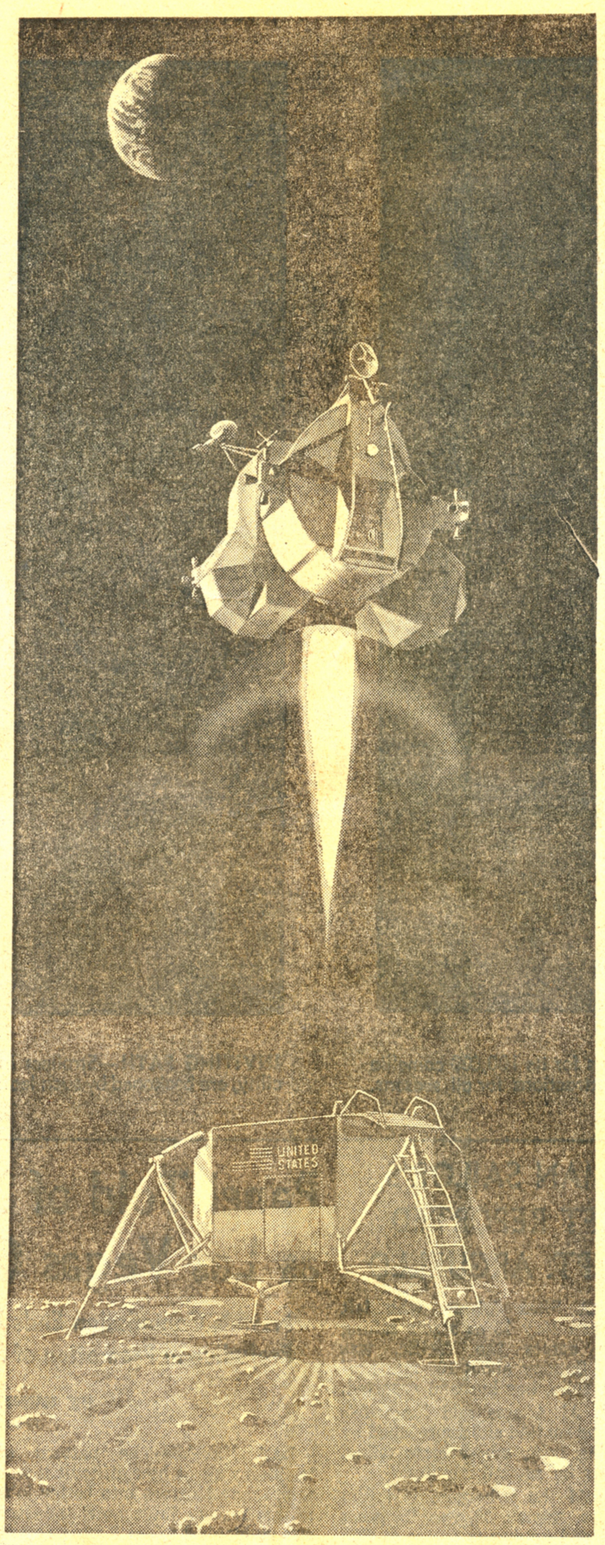
Landing Site on Moon Pinpointed as 4 Miles West of Intended Spot

HOUSTON (UPI)—Looking at the moon from earth, Apollo 11's Tranquility Base is a fraction above the equator and roughly in the middle of the right-hand half.

In the quarter-moon of Sunday night, it was near the left edge of the lighted lunar segment.

The landing base was pinpointed by the space agency as 0.799 degrees north latitude—less than one degree north of the equator—and 23.6 degrees east longitude. This was about four miles west of the intended landing area near the western edge of the moon's Sea of Tranquility.

POPE VIEWS MOON AREA—Pope Paul VI looks through telescope at Castel Gandolfo, Italy, home to see moon landing site.
(AP) Wirephoto



THE WAY HOME — Lunar vehicle's ascent engine is to lift astronauts Neil A. Armstrong and Edwin E. Aldrin Jr. off moon to rejoin Apollo 11. The descent stage serves as launch pad.
Times drawing by Russell Arasmith

Wives of Armstrong and Aldrin Amazed, Joyful at Moon Walk

HOUSTON (AP) — Amazement mingled with joy Sunday night when the wives of astronauts Neil A. Armstrong and Edwin E. Aldrin Jr. saw their husbands take man's first steps on the moon.

"I can't believe it is really happening," Mrs. Armstrong said as she watched the Apollo 11 commander climb down the ladder of the moon lander.

"That's the big step," she said as he planted one foot on the moon's surface.

She had some wifely advice also. "Be descriptive now," she said when Armstrong told how moon dust stuck to his boots.

"It seems like a dramatic TV show," said Mrs. Aldrin, "but it seems unreal."

When Aldrin jumped off the last step of the lunar lander ladder, then repeated the jump, "everyone in the Aldrin home was whooping and hollering," said a family spokesman.

There was plenty of "whooping and hollering" in the homes of all three Apollo 11 pilots earlier when Armstrong and Aldrin landed on the moon.

"Good, good, good," shouted Mrs. Armstrong, who leaped from a bed covered with maps and charts on which she followed the final minutes of descent.

Wife 'Just Can't Believe It'

"I just can't believe it," said Mrs. Aldrin, hugging her father, Michael Archer, Ho-Ho-Kus, N.J.

In frontyard news conferences, the wives of all three crewmen expressed their happiness.

But Mrs. Armstrong said she didn't consider the moon landing the greatest moment of her life.

"That was when we were married," the unperturbed Mrs. Armstrong said.

"I was tremendously excited," she said. "It is a marvelous thing when we have succeeded in landing on the moon."

"I cried after the touchdown, I was so happy," said Mrs. Aldrin. "I still am not able to believe it."

Despite intermittent rain, Mrs. Aldrin joined a large group of newsmen and photographers under the towering oak and elm trees of her front yard, where she was sheltered by an umbrella but several times lifted it to one side at photographers' requests.

But "The splashdown will be the best part of the flight." Mrs. Aldrin said in answering a question.

"I thought it was fantastically marvelous," said Mrs. Michael Collins, wife of the Apollo 11 crewman who kept watch in the command capsule while the other two visited the moon's surface.

"Don't you think he is there with them in spirit?" Mrs. Collins answered when asked if she thought her husband was disappointed because he was not in the landing party.

All three wives have already made plans for a presplashdown celebration Tuesday night at a party hosted by astronaut William A. Anders.

Anders was with Mrs. Armstrong during the moon descent, pointing out on the charts and maps the locations named by Armstrong and Aldrin on the way down.

In the Aldrin home, astronaut Russell Schweickart kept Mrs. Aldrin advised of the lunar lander's descent. She sat on a sectional sofa, alternately looking at a chart, listening to the mission control "squawk box," and watching TV.

MISSION CONTROL TO EAGLE

Houston Cool Heads Help Spacemen Trio

BY JOHN J. GOLDMAN and NICHOLAS C. CHRISS
Times Staff Writers

HOUSTON—On the 20th day of July in the year of 1969, a group of men gathered in a room on earth.

They sat before their control panels, computers and communications equipment. And the tension was almost unbearable.

Then, through his headset, one of the dozens of technicians received the word.

He gleefully slammed his fist down on the table in front of him.

The first humans had landed on the moon.

"Houston, Tranquility Base here. The Eagle has landed," said Neil A. Armstrong from the surface of the moon some 5 billion years old and some 250,000 miles away from the Mission Control Center in Houston.

"Roger, Tranquility, we copy you on the ground. You've got a bunch of guys about to turn blue. We're breathing again. Thanks a lot."

Beginning of a New Era

With that exchange between a spindly legged spacecraft perched on the moon and an equipment-crammed control room on earth, a new era in the history of man officially began.

Later, this new era of exploration blossomed as Armstrong, a slow-moving figure in a space suit, with a big life support system on his back, descended to the surface of the moon.

"Neil, we can see you coming down the ladder," said Mission Control.

Said Armstrong as he reached the moon:

"One small step for man . . . one giant leap for mankind."

"Beautiful," said Mission Control as Edwin E. Aldrin Jr. reached the moon's surface, too, guided there by Armstrong.

Leap in Kangaroo Fashion

For the second time in a little more than 6½ hours, a mixture of awe, tension and excitement filled the room on earth. There was even humor as Armstrong and Aldrin loped and kangaroo-hopped in the moon's one-sixth gravity.

Mission Control is in Building 30 at the Manned Spacecraft Center. It is a small room in terms of the millions of bits of information stored in the computers and the minds of men who work there. It is about the size of three big living rooms. There are about a dozen rows of consoles. Before each console sits a technician monitoring every system, every important working part in a spacecraft.

Into this room, Sunday, filed the cream of the U.S. space effort, including Wernher von Braun, who once wrote a book called "I Aim for the Stars." Others included Dr. Thomas O. Paine, administrator of the National Aeronautics and Space Administration; astronauts Eugene A. Cernan, Pete Conrad and James A. Lovell Jr.; Dr. Kurt Debus, director of the Kennedy Space Center.

Waiting Quietly at Rear

There was also Christopher Kraft, director of flight operations, and Robert C. Semans Jr., secretary of the Air Force; Lt. Gen. Samuel C. Phillips, director of the Apollo Program; Dr. Robert R. Gilruth, director of the Manned Spacecraft Center here. Some stood in the back of the room waiting quietly.

The key personnel manned the first few rows of consoles—known at the manned space flight center as the "front trenches."

They were men like Eugene P. Kranz, chief of the Flight Control Division, crewcut, born in Toledo, Ohio, educated in St. Louis, father of six children. Or Dr. Charles Berry, the astronauts' physician. Another was Charles M. Duke Jr., an Air Force major and an astronaut, who had been asked personally by Armstrong to take over as capsule communicator during the moon landing mission.

Duke is slim, jaunty. He looks like a 25-year-old college instructor. He is 34.

Tension Begins to Build

The tension began to build earlier in the day as the Apollo spacecraft and lunar landing vehicle — Columbia and Eagle — swept on a final pass behind the moon, out of communication with the earth.

Flight controllers stood around in little groups. There was not much they could do until the worldwide network of tracking stations acquired the spacecraft again.

Silence settled over Mission Control. Flight Director Kranz asked everyone in the room to sit down, to be prepared for the events which are coming.

"Good luck to all of you," he told his colleagues.

Douglas Ward, a NASA public affairs officer, glanced about the room with its special boards set up to plot the big burn of the descent engine which would guide men to the moon.

"These displays, by the time it is all over, will look a great deal like a combination Christmas tree and Fourth of July," he said.

Come From Behind Noon

Columbia and Eagle were to come from behind the moon in one minute and 39 seconds, when Ward spoke.

These initial words, at least, were reassuring.

"How did it go?" Duke, the capsule communicator, asked Columbia.

"Listen, babe, everything's going just swimmingly. Beautiful!" said astronaut Michael Collins in the command capsule.

Then came the first of the little problems. Suddenly all data was lost from Eagle. An antenna was switched on the lunar landing vehicle, and communication was restored.

Kranz told his fellow flight controllers they were off to a good start. "Play it cool," he said.

And play it cool, they did.

Current Fluctuates

For a brief moment, the alternating current in Eagle fluctuated. The problem stopped.

The radio in the lunar lander began to fade. Houston ordered Eagle to change position slightly.

"Eagle, Houston," Duke snapped into his microphone. "If you read, you're a go for powered descent. Over."

In Columbia, Collins relayed the instructions.

"Eagle, this is Columbia. They just gave you a go for powered descent. Over."

The language was clipped, the voices, precise. It was no kidding now.

Some 47,000 feet above the moon Aldrin read off to Armstrong the check list for the big burn of the descent engine.

"Balanced coupled on, TA throttle, minimum throttle, AUTO, CDR . . . " the language of the space age flowed from Eagle to the control room.

There was a little more fluctua-

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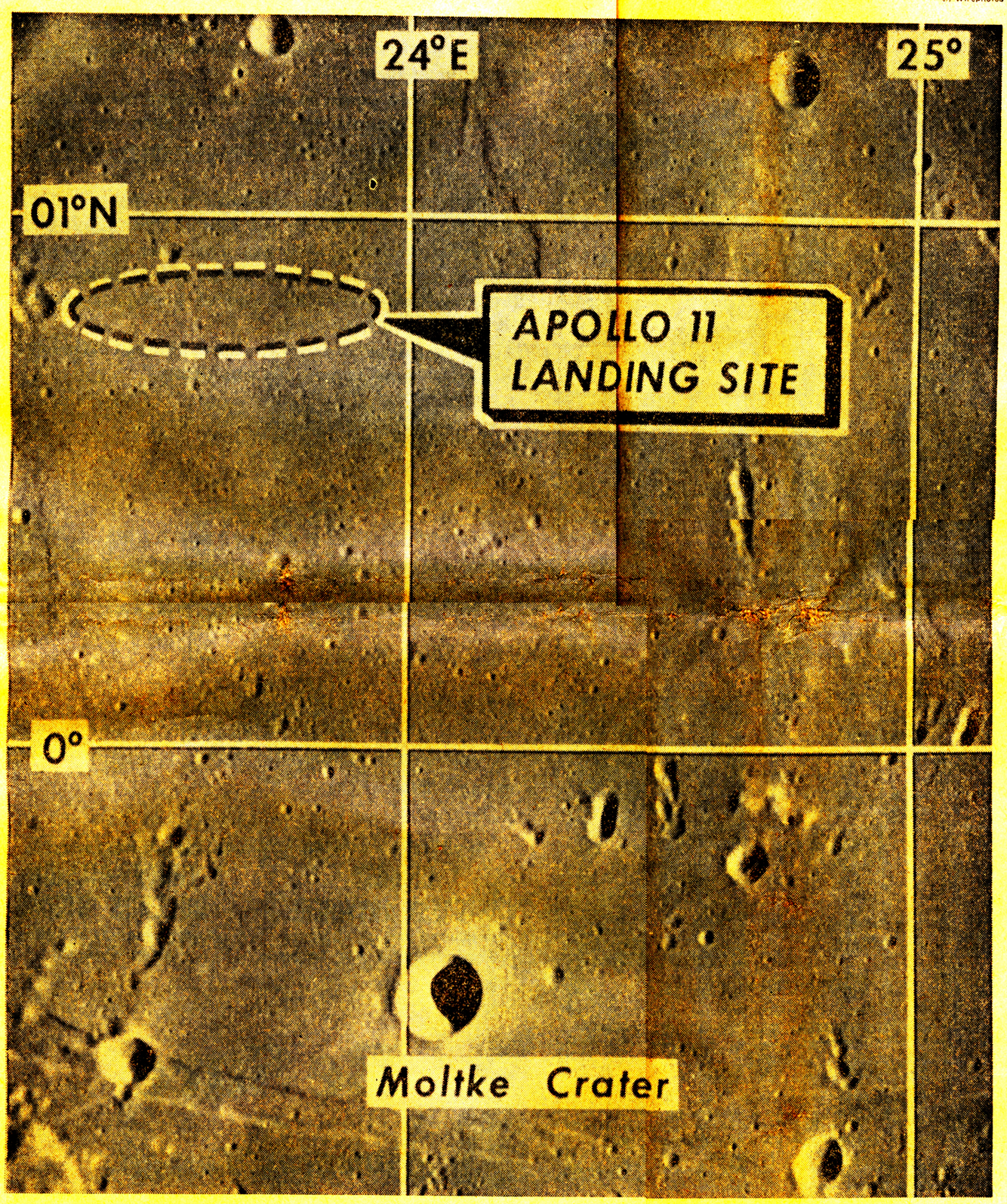
SWEATING IT OUT—Astronaut Alan L. Bean, who will be on next moon flight, bites fingernails as he watches tracking board during critical moments of Apollo 11 module's landing on the moon.
(AP) Wirephoto

FIRST MAN ON MOON — Closeup from lunar landing craft's television camera of Neil A. Armstrong as he reached the moon's surface. UPI Wirephotos

Apollo Wives Exult Over the Landing

Mrs. Armstrong . . . delighted with pilot-husband's landing skill.

Mrs. Collins . . . in a state of exuberance.



LANDING SITE — Circled is general area where Apollo 11 lunar vehicle came to rest. The spot was pinpointed by the U.S. space agency as 0.799 degrees north latitude and 23.6 degrees east longitude. This photo of the area was taken during the flight of Apollo 10.

Mrs. Aldrin . . . holding umbrella, she exclaims, "They made it."

ANXIOUS MOMENT—At Houston spacecraft center during the landing are, from left, George Trimble, deputy director; Christopher C. Kraft, director of flightt operations; George Low, manager of the Apollo program, and Drr. Robert R. Gilruth, director of spacecraft center.

'BREATHING AGAIN'

Highlights of Dialog in Apollo's Descent

HOUSTON (UPI)—Here are highlights of the dialog during the Apollo 11 lunar module's descent and landing on the moon and the astronauts' initial steps on its surface:

Capsule communicator Charles M. Duke — Eagle you're looking great. Coming up 9 minutes.

Mission Control—We're now in the approach phase. Everything looking good. Altitude 5,200 feet.

Astronaut Edwin E. Aldrin Jr.—Manual attitude. Control is good.

Duke — Roger. Copy.

Mission Control — Altitude, 4,200 feet.

'Go for Landing'

Duke — Houston; you're go for landing. Over.

Aldrin — Roger. Understand go for landing.

Duke — We're go. Think tight. We're go.

Aldrin — 2,000 feet. Into the AGS (abort guidance system). 47 degrees.

Duke — Roger.

Aldrin — 37 degrees.

Duke — Eagle, looking great. You're go.

Mission Control — Altitude, 1,600.

Duke—1,400 feet. Still looking good.

Aldrin—35 degrees.

Duke—35 degrees.

Aldrin — 750 coming down to 23. 700 feet — 21 down, 33 degrees . . . feet down to 19.54, 540 down to 30 . . . 15. 400 feet down to 9. A forward. 350 feet down at 4 (static).

(The figures given for forward and down by Eagle are reports of speed —velocity in feet per second—both across the face of the moon and down toward its surface.)

Looking Good

Aldrin—300 feet. Down 3½, 47 forward. One minute, 1½ down, 70. Altitude velocity light. 15 forward. Coming down nicely. 200 feet. 4½down, 5½ down. 9 forward. 75 feet. Looking good. Down ½. 6 forward. 60 second lights on. Down 2½. Forward. Kicking up some dust. Big shadow. For 4 forward. 4 forward drifting to the right a little. Down ½. 30 seconds.

Astronaut Neil A. Armstrong — Contact light. Okay, engine stop. ACA (attitude control assembly) at a detent. Modes control both auto. Descent engine command override off. Engine arm off.

(When Armstrong reported "contact light," probes on the lunar module's landing pads had touched the moon.)

Armstrong — Houston, Tranquility Base here. The Eagle has landed.

Duke—Roger, Tranquility. We copy you on the ground. You've got a bunch of guys about to turn blue. We're breathing again. Thanks a lot.

'Don't Expect Much'

Public affairs officer Douglas Ward—We don't expect much in the way of visual description of the landing area from the crew until after they have gotten through these critical stay, no stay periods.

Armstrong — Houston, that seemed like a very long final phase. The auto target was taking us right into a football field size crater with a lot of boulders . . . It required us flying manually over the rock field to find a real good area.

Duke—Roger, we copy. It was beautiful here, Tranquility. Over.

Aldrin—We'll get to the details here of what's around here, but it looks like a collection of every variety, shape, angularity —every variety of rock you could find.

Duke — Tranquility, be advised there are lots of smiling faces here and all over the world.

Astronaut — Two of 'em up here.

Astronaut Michael Collins in Columbia — And don't forget one in the command module. Put me on relay, Houston.

Duke—Roger Columbia. Say something, they ought to hear you.

Collins — Roger Tranquility Base. It sure sounded good up here. You guys did a tremendous job.

Armstrong—Roger, just keep that orbiting base up there.

Collins—Will do.

'Hatch Opening?'

Ground communicator Bruce McCandless—Neil, this is Houston. What is your status on the hatch opening?

Armstrong—Everything is go here. We're just waiting for cabin pressure to bleed to a low enough pressure to open the hatch. . .

McCandless—Roger . . . You think you can open the hatch with a pressure of about 1 PSI?

Armstrong—We're gonna try it.

McCandless—Roger.

Armstrong—The hatch is coming open . . .

McCandless—Hatch reported coming open at 109 hours, 8 minutes 35 seconds . . .

Armstrong—Ok, Houston. I'm on the porch.

McCandless — Roger, Neil . . .

McCandless — "Are TV circuit breakers in?

Armstrong—Roger, Circuit breakers in.

McCandless—We're getting a picture on the TV.

Armstrong — Going to step off the LEM now.

Armstrong—One small step for man, one giant leap for mankind.

COOL

Continued from Second Page

tion in the AC voltage. The fluctuation stopped.

The big burn began.

"Altitude 40,000 feet," Eagle said, beginning to descend. The world-wide tracking network reported a good radar fix on Eagle and Columbia.

Altitude, 27,000 feet. A light flashed in Mission Control and in Eagle. Alarm. A computer in the lunar landing vehicle was threatening to become overloaded.

Houston said it would monitor the situation.

Eagle continued to descend closer to the moon's surface.

Altitude, 4,200 feet. "You're go for landing. Over," Duke said.

"Roger, understand, go for landing," came back the word from Eagle. "Three-thousand feet."

Then came another danger signal. The flickering red light went on again in Houston, then in space.

"Twelve alarms. 1201," Armstrong said tersely.

"1201," he repeated. Again a computer was threatening to become overloaded.

Heart Beat 156

Armstrong's heart was now 156 beats a minute. Some of the computers which have so much to do with navigation in Eagle were acting up.

"We're go. Hang tight. We're go. Two-thousand feet," Eagle said.

"Eagle looking great, you're go," Houston replied.

All the years of training were paying off. In Eagle and in the Control Center, the alarms were being almost instantaneously solved one-by-one. In their rehearsals, the men on the ground and in space had been through this all before.

The figures flowed from Armstrong and Aldrin. The test pilot heritage was holding up well in time of stress.

"Thirty-five degrees. 750, coming down at 23. 700 feet, 21 down," Eagle reported. "Six-hundred feet, down at 19. Five-hundred and forty feet, down at 30—down at 15. Four-hundred feet, down at 9 . . . got the shadow out there . . . altitude velocity down nicely . . . 72 ft., . . . looking good . . ."

"We had our hands full with what we had to do today," said Kranz.

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Because of the nature of the Saturday and Sunday scheduling, only a limited number of enrollments can be accepted and must be completed by August 16th.
Those wishing more information are urged to contact:
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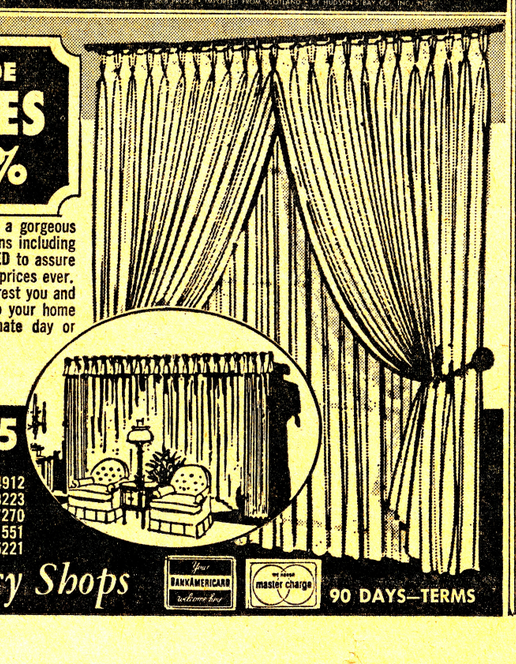
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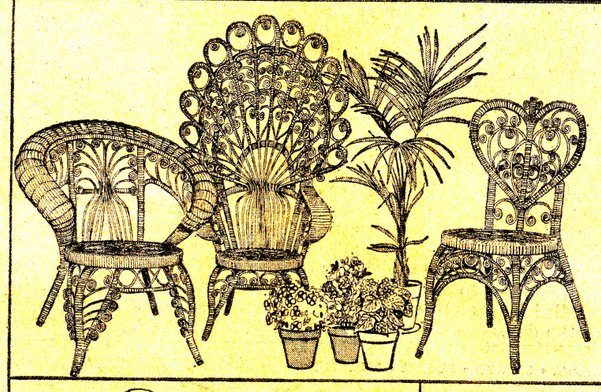
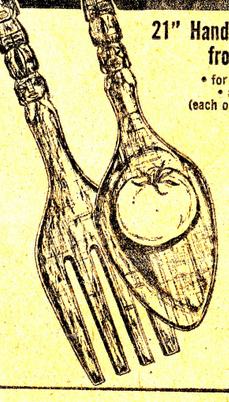
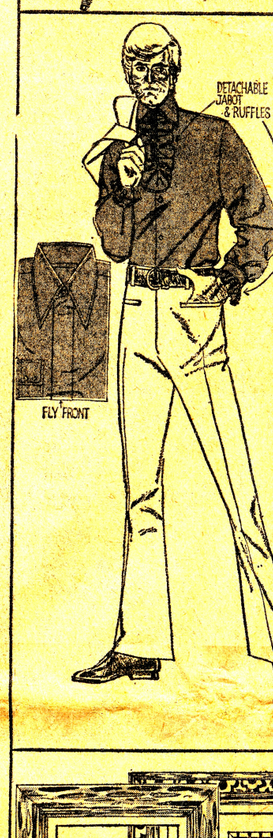

Rattan Chairs from Hong Kong
• be seated . . . in splendor! • victorian elegance has just arrived from the british crown colony . . . a beautifully matched trio, fashioned of unpainted white rattan and white peel • in a charming hearts-and-flowers fantasy . . . or take the proud peacock with a tall, soaring fantail • nicely natural . . . or spray-paint them to highlight a bedroom, guest room, terrace or lanai
side chair, 8.99
arm chair, 12.99
peacock chair, 12.99


21" Hand-Carved Salad Set from the Philippines
• for a giant, jolly green salad! • a fabulous fork and spoon (each over 21") . . . hand-carved from luxurious luan . . . hand-rubbed to a fine finish, the handles are handsomely detailed in an authentic south-sea motif • an impressive pair to stir-up the conversation, serve the exceptional, or wake-up a wall!
set, 2.99

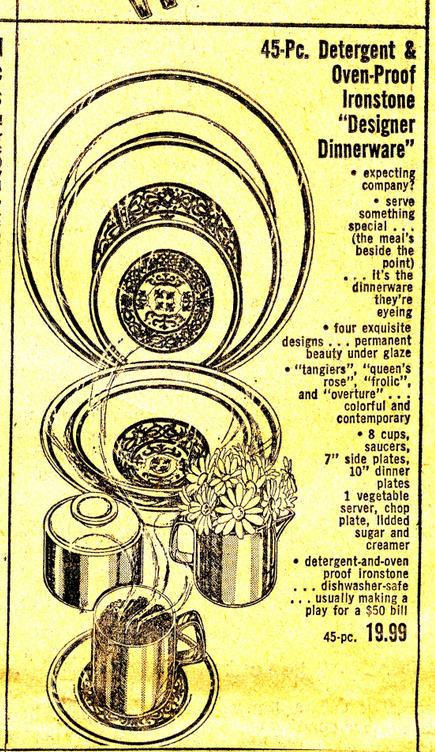


Men's Long-Sleeve "Designer" Shirts
• the shirt tale's out! • in time for a smashing summer: the wing-span collared shirt in soft, washable crepe . . . with a fly-front and double-buttoned cuffs • the dashing "cavalier of permanently-pressed polyester-cotton . . . its jaunty jabot and ruffled cuffs both snap-on and-off! • deep-toned solids . . . sizes s, m, l
9.99 to 12.99

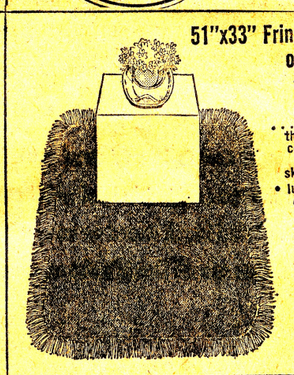
Permanent Press Flared Bottom Slacks
• a flare for fashion! • trimly tailored . . . with pockets-in-front and wide-belt loops . . . they gradually flare to a full 21" • a smooth "bachelor's blend" (65% dacron® polyester, 35% combed cotton) . . . in smart summer solids • men's sizes 27-38
pair, 5.99

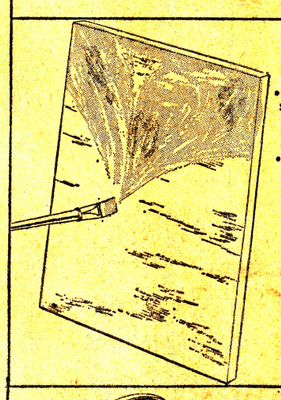
Full Fashioned 100% Acrylic Belted Vests
• front-line fashion! • sleeveless sweater vests of 100% acrylic (hand washable) . . . beautifully textured knits, belted below for that long, lean look . . . covered buttons cleverly climb the front! • gold, hunter green or deep blue . . . sizes 34-40 • you'd expect a "boutique" tag to $10!
4.79

Bonded Acrylic Flared Slacks
• fancy pants! • fully bonded acrylic in country checks and plaids . . . golds, blues, copper, olive, etc. • 3 shapely styles (sizes 8-16) . . . they flare to a flattering 20"
pair, 4.69


45-Pc. Detergent & Oven-Proof Ironstone "Designer Dinnerware"
• expecting company? • serve something special . . . (the meal's beside the point) . . . it's the dinnerware they're eyeing • four exquisite designs . . . permanent beauty under glaze • "tangiers", "queen's rose", "frolic", and "overture" . . . colorful and contemporary • 8 cups, saucers, 7" side plates, 10" dinner plates 1 vegetable server, chop plate, lidded sugar and creamer • detergent-and-oven proof ironstone . . . dishwasher-safe . . . usually making a play for a $50 bill
45-pc. 19.99

Sale of Decorator Picture Frames
• we have the frames . . . get the picture? • an exciting selection in versatile sizes . . . for decor demands ranging from early egyptian to contemporary californian . . . to enhance paintings, prints, photos, mirrors, etc. • all with double-frame construction . . . liners of linen or plush velvet fabrics . . . your choice of decorator colors!
2.99 to 14.99


51"x33" Fringed Area Rugs of 100% Rayon
• happily underfoot! • roomy area rugs of 100% rayon pile . . . 51"x33" (including the fluffy fringe) . . . completely washable, with special skid-resistant backing • lush, tweedy textures of cherry/apple red, emerald/sky blue, avocado/olive, old gold/sunshine, true blue/light blue, etc.
each, 3.99


Sale! Stretched Canvases
• top grade canvases on sturdy frames of wood, primed and ready for oil, casein or acrylic paints • two-ply twisted yarns give the canvas longevity . . . will not crack, chip, flake or permit colors to run or bleed

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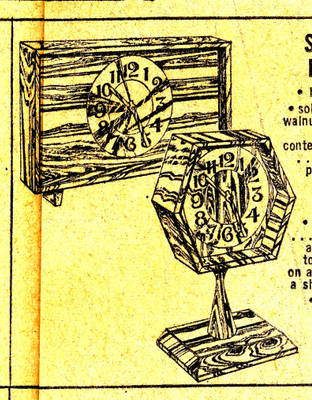
24"x30"	2.99	2.59
24"x36"	3.49	2.99


Solid Walnut Desk Clocks
• beautiful timing! • solid, satin-smooth walnut in a fantastic collection of contemporary casings . . . faced with the perfect choice of burnished brass (and some with glass) • battery-operated . . . as wide as 12", as tall as 15" . . . to proudly display on a desk, a mantle, a shelf or sideboard • you'd expect at least a $25 tag!
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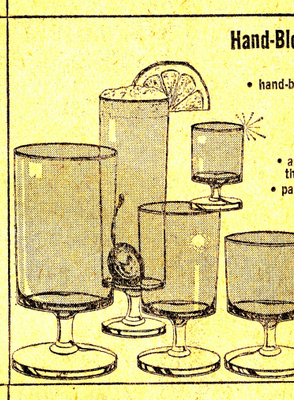
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set, 1.99

Floral Linen Tote Bags
• what a lovely way to carry off your vacation! • flower-splashed tote bags of luxurious linen, fully lined . . . handles and trims of black leather-like vinyl • 3 sizes in assorted hues: 12"x13¼"x4½", 13"x14¼"x5", or 14"x15¼"x5½" • roomy inner-outer side compartments . . . zippered with lock and key

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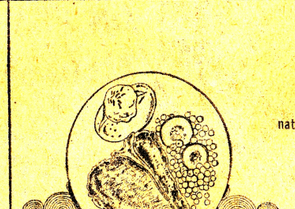
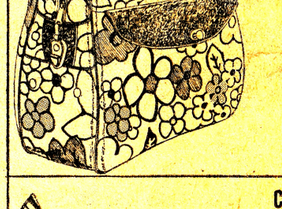
100 tablets, 99c


Mosaic Hemp Place Mats
• hand-woven in the philippines! • woven ovals of long-wearing natural hemp . . . sewn together in a mosaic pattern • lovely place mats, 18"x12" . . . in dark gold, canary, natural, orange or olive green
each, 99c


Capiz Shell-Lined Monkeypod Trays
• fresh from the philippines! • hand-carved monkeypod trays with laminated linings of shimmering capiz shells . . . dandy with candy, handy for hors d'oeuvres • five delightful designs: a pineapple, flower, rectangle, peanut or an S-shape . . . ready to pass out the favors?
1.99 to 3.49

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• from our chalk garden! • chalk-colored china bowls in graceful tulip shapes . . . they petal out to a perfect 4½" • get one, two, three . . . as many as you need . . . assorted decorator colors • for hors d'oeuvres, side-dishes, finger-bowls (guaranteed to impress your guests)
each, 29c

Parquetry-Design Wooden Bowls & Servers
• ready to toss a salad? • we polished our bowls until they shone . . . polished parquet perfection • well-grained, hand-crafted, piece-by-piece in the orient • dishwasher-safe, odor- and detergent proof . . . virtually unbreakable • 6", 10" or 12" round bowls or a 12"x9" boat design . . . plus a pair of servers on the side
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Apollo Fallout Proving Useful in Other Fields

$24 Billion Program Produces Inventions, Applications, Ideas to Benefit Industry

BY JOHN F. LAWRENCE
Times Financial Editor

"Great, but what will you do with it when it's yours?" taunted The Economist of London in bold type across a cover picturing the moon.

Not much, maybe, but the respected weekly and Americans might be interested in some of the earthbound benefits of the Apollo program.

At Cedars of Lebanon Hospital in Los Angeles, for example, patients recovering from paralyzing strokes are getting back on their feet faster than usual thanks to what might be called an antigravity suit.

Most of the nation's major gas companies are plotting to take over the job of lighting your electric lamps and running your washing machine due in large part to the moon program.

And someday you probably won't have to worry about faulty wiring burning your house down. If the wires do catch fire, they'll put themselves out.

Applications Elsewhere

When scientists and engineers—not to mention taxpayers — discuss whether Apollo is worth the $24 billion it cost, the subject quickly turns to fallout. Fallout is what the program has produced that has applications elsewhere. To astronomers it means new information to use in probing the universe. To engineers it means exotic new manufacturing methods.

A National Aeronautics and Space Administration list covers 185 items, ranging from a switch that is operated by human eye movements to a computerized system for coming up with low-cost building designs. But NASA's list doesn't cover some of the most exciting pieces of fallout turned up in talks with major companies that have worked on Apollo.

Take those antigravity suits. Ai-Research Manufacturing Co. in Los Angeles developed them to find out what it's like to work in the one-sixth gravity of the moon. It wanted to suspend a man from a pulley-like contraption that would support five-sixths of his weight but not hamper his actions with painful straps.

"What we needed was something with no pressure points on the body," explained Dr. James N. Waggoner, the company's director of life sciences.

The answer was something resembling a suit of clothes made out of a volleyball net. With this device, AiResearch discovered that the astronauts shouldn't hop around the moon in great loping strides, a la science fiction. Rather, they should save energy by dragging their feet. But despite the lesser gravity, the bulky suit and equipment on their backs were expected to wear them down quickly.

Such discoveries appear minor next to what doctors at the Ben R. Meyer Rehabilitation Center at Cedars of Lebanon Hospital have found out.

By suspending patients from the ceiling in the suits, Dr. John H. Aldes, director of the center, says he can get stroke sufferers out of bed in 10 days instead of four to eight weeks. The suit allows them to be upright and simulate walking without expending much energy.

"It gets them away from the acute phase faster and can cut a month or more off the hospital stay in some cases," he says.

He envisions the possibility of providing such suits for thousands of paraplegics, building tracks into the ceiling of their homes and offices, and allowing them to move about freely.

Of all the sciences, medicine may have gained the most, at least in immediate terms, from the moon effort.

"We know a lot more about how the human body reacts when it's well," observes AiResearch's Waggoner.

New Discovery

Doctors used to be concerned about the rapid weight loss of bedridden patients. Thanks to tests simulating the long confinement of the astronauts, however, they've discovered most of this weight loss is simply water flushed out of the system because the inactive muscles don't call for fluid.

As a result of such discoveries, however, "we've made definite inroads into the problems of recovery from chronic disabling disease," he says. "We know more about maintaining muscles, about exercise regimes, and this greatly shortens recovery time," he adds.

The Apollo program and its predecessor, Gemini, have produced some new medical machinery. New compact monitoring devices are permitting a few hospitals to keep track of patients' pulses and other vital signs by remote control instead of time-consuming nurses' checks.

Moreover, such instruments may be used to keep track of heart patients after they've been released from the hospital.

Apollo fallout cuts across scores of fields besides medicine.

At North American Rockwell Corp. in Downey one prospective consumer product has been developed as an outgrowth of the fire that killed astronauts Virgil I. (Gus) Grissom, Edward H. White II and Roger B. Chaffee during a ground test Jan. 27, 1967.

After the fire, North American's Apollo program executives decided they had to develop a fireproof coating for the miles of wiring in the space ship—either that or many of the electrical components would have to be scrapped and new fireproof parts developed.

Four weeks later they had their answer—a new paint that's so fireproof that it extinguishes itself when ignited.

The need for fireproofing also led International Latex, a subsidiziary of Glen Alden Corp., Dover, Del., which is making the astronauts' spacesuits, to call on Owens-Corning Fiberglas Corp., Toledo.

Owens-Corning had developed a type of fiber coated with DuPont's Teflon — the plastic that makes frying pans easier to clean—that was both fireproof and much easier to use in clothing than ordinary fiberglass yarn. Now suits for firemen and racing drivers are being made out of the material.

Much of the Apollo fallout stems not so much from way-out research as from studying things mankind has known for decades. The Apollo program simply provides the money and the stimulus.

A prime example is the fuel cell. The idea that electricity can be produced not only with big generators but also by chemically combining hydrogen and oxygen has been around a long time, but it was Apollo that provided the demand for such power.

Fuel cells are a lot lighter than ordinary storage batteries and weight-saving is crucial on the space ship. Besides, the fuel cells produce a useful by-product—drinking water.

Pratt & Whitney Aircraft, a division of United Aircraft Corp., has 300 professionals working on fuel cell technology at a new plant in South Windsor, Conn. One result: A major effort with 28 gas utilities (including Pacific Lighting in Los Angeles) to develop fuel cells that will take natural gas coming into homes and convert it into electricity.

The project, now in its third year, has included a successful test on a home in Columbus, Ohio. Now the utilities are talking about another three-year program to include as many as 80 installations around the country.

The electronic equipment going into Apollo also is likely to produce far-reaching changes in the way some tasks are performed here on Earth. AC Electronics Division of General Motors Corp. in Milwaukee has adapted the guidance system it makes for Apollo to a navigation system for Boeing's giant new 747 airliner.

Designed by Massachusetts Institute of Technology, the system has been so precise it has eliminated some of the in-flight corrections necessary on the Apollo moon flights. Similarly, it should keep airliners on truer course, saving time and fuel on intercontinental flights.

Another of the many new electronic items is something called a Scatterometer. A type of radar developed by Ryan Aeronautical Co., San Diego, it can be used aboard an airplane or satellite to measure accurately such things as the height of ocean waves and the depth of snow packs.

It can even measure the water content of soil,, information that could help farmers decide what kind of crops to grow and how much irrigation is necessary.

Much of the work to program computers for Apollo can be applied to other problems. TRW, Inc., in Los Angeles is applying a computer analysis technique used on Apollo to a study being made of high-speed transit systems for the New York-Washington corridor. The study will compare costs and speed relationships of several propulsion systems.

The computer programming has been gathered by the Computer Software Management and Information Center (otherwise known as COSMIC) at the University of Georgia, where it's made available to private industry at cost. Vegetable canners have used a system first developed to work out the best spacing of rocket engine nozzles to compute the most efficient schedule for picking and processing various crops around the year.

As a result of efforts to make the computers aboard Apollo useful to the astronauts without instructions from earth, TRW also hopes to be able to make the mechanical brains converse in English rather than complex mathematical language familiar only to experts.

But what Apollo fallout could be more significant than McDonnell Douglas Corp.'s discovery of a way to keep pigeons from flying around in the rafters of its new Huntington Beach facility, bombing the Saturn stages in production below?

A fancy high-frequency air whistle couldn't do it. Even closing the doors didn't work. The pigeons still found a way in.

Then the aerospace company began feeding the pigeons. It treated seeds with something that dulled the birds' nervous systems temporarily. Now the pigeons stop by for a bite, then fly away.

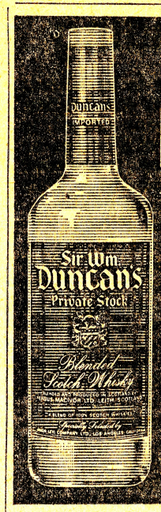
The only trouble is McDonnell Douglas' experts don't really know why.

ALDRIN ASKS EVERYONE TO GIVE THANKS

HOUSTON (UPI) — Edwin E. Aldrin Jr. Sunday asked everyone in the world to pause and give thanks for the lunar landing.

The astronaut, speaking in a calm voice from the lunar lander Eagle, said:

"This is the LM pilot. I'd like to take this opportunity to ask every person listening in, whoever and wherever they may be, to pause for a moment and contemplate the events of the past few hours and to give thanks in his or her own way."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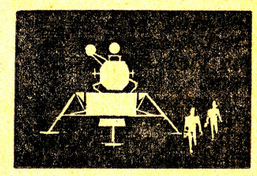
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Millions Over World Cheer Moon Landing

LONDON (AP) — Crowds screamed joyously in Trafalgar Square, people danced in Chile, a Russian yelled, "Hooray." Almost everyone on earth was somehow touched by man's arrival on the moon.

Pope Paul VI praised America's three astronauts as "conquerors of the moon" minutes after the Eagle spacecraft touched down on the lunar surface. He said man faces "the expanse of endless space and a new destiny."

Soviet media did not dramatize the landing. Reports of the touchdown were buried in Soviet television and radio newscasts behind other news of the day. But individual Muscovites cheered and expressed congratulations to Americans in the Soviet capital.

"It's a great day!" shouted another.

In the Middle East Arab radio stations interrupted bulletins of a major air battle over the Suez Canal to acclaim the event and praise Neil A. Armstrong and Edwin E. Aldrin Jr. for "making history."

The streets of some of the world's largest cities—Mexico City, Oslo, Belgrade, Rome—were nearly deserted as millions stayed home to watch television screens.

One Yugoslav teen-ager said: "They have stolen the romance out of the moon and it will never be the same again. Now the moon is real and lovers won't have it for themselves alone any more."

In the middle of a war broadcast from Beirut the announcer said: "Ladies and gentlemen. The moon is now within man's grasp." Then Feirouz, one of the Middle East's top singers, began crooning, "Oh, Moon, I am with you."

Poles jammed the lobby of the U.S. Embassy in Warsaw while a crowd of hundreds applauded outside. In Guayaquil, Ecuador, firetrucks blasted their horns to let citizens know of the safe landing.

As Chileans danced in the streets of Santiago, an elevator boy proclaimed: "Thank God the module landed straight side up."

At Jodrell Bank Observatory, where British astronomers have been tracking both Apollo and the Soviet unmanned probe Luna 15, officials broke into applause.

Britain's leading astronomer, Sir Bernard Lovell, said:

"The moment of touchdown was one of the moments of greatest drama in the history of man.

"The success of this part of the enterprise opens the most enormous opportunities for future exploration of the universe."

$24 MOON BET WINS $24,000 FOR BRITON

LONDON (AP) — David Threlfall, who bet $24 five years ago that man would set foot on the moon before 1971, was handed a check for $24,000 on British television Sunday night — even though he hadn't yet won the wager. He got the check even before the U.S. astronauts began their walk on the moon.

A spokesman for London bookmaker William Hill, with whom Threlfall placed the bet at 1000-1 odds when he was 26, said the touchdown by the lunar module Eagle was "good enough for us."

NIXON

Continued from First Page

grasped the historic importance of the mission," Borman later told reporters.

Mr. Nixon's day, like that of most Americans, was fashioned around the events on the moon. In the afternoon, while technicians prepared his Oval Office for the evening telephone call, the President watched a portable color television set in his suite of offices in the Executive Office Building, across the street from the White House, while the lunar module was landing.

During the session he called the landing the greatest moment of our time, according to white House press secretary Ronald Ziegler.

The President, moved by the experience, telephoned Secretary of State William P. Rogers and told him he expected the success to have an immensely favorable reaction around the world that will bring people closer together.

After the landing Mr. Nixon called the Executive Mansion to discuss the day's events with Mrs. Nixon and with Mrs. Mamie Eisenhower, who is visiting the White House. Col. Borman also talked to Mrs. Eisenhower.

Elaborate preparations had been made to keep the President in touch with the situation and to keep the public in touch with the President.

Engineers had rigged a hot line for the Pesident's phone call, which he said was the most historic ever made from the White House.

The call was relayed to Goldstone, Calif. where a huge antenna radioed it to the tiny antennas on the astronauts' backpacks.

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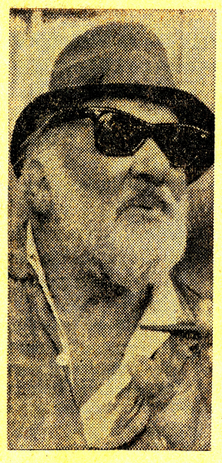

Harold Welke

JOY, DOUBT

Southland Reaction to Feat Mixed

BY STEVE SMITH
Times Staff Writer

There were mixed reactions on the part of some Southern Californians minutes after the touchdown of Apollo 11 Sunday.

Most hailed the landing as a magnificent achievement but others clearly felt the money and effort poured into the program were misplaced.

"Phenomenal!" said Michael Silberhorn, 24, a Los Angeles packing company executive. "This is going to change our world greatly. A whole new philosophy toward the universe will develop. We will be able to view the earth in perspective."

On the other hand, Enid Brown of Rosemead viewed the whole affair as an "unnecessary excursion."

"You want to know what I think of it?" she asked. "I'll tell you. I think it's a waste of our tax money. We could use that money for plenty of other things instead of going to the moon."

At Disneyland an estimated 4,000 persons gathered in front of a 6- by - 8-foot television screen to witness the animation of the landing and hear the voices of the astronauts. When the craft touched down, the crowd cheered loudly.

Expresses Relief

Among the crowd were members of the Russian track and field team. As the Eagle landed, some of the Russians gave no expression of excitement. Others, however, cheered and applauded.

In Los Angeles, William Webb, a waiter on the El Capitan train to Chicago, expressed relief that the landing was made safely.

"I think it's wonderful. Only thing about it is when they get down they're going to have to start all over again," he said.

The Ambassador lobby turned into a "New Year's Eve party," said Bob Van Epps, convention manager.

"There were TV sets in all the restaurants and all the bars but there were so many people in them nobody could get in. There were streamers and banners and everybody was yelling and when they landed, paper plates went up in the air.

"It seemed like good old times to see that kind of spirit," he added.

The least appreciative reaction of all, however, came from Harold Welke, 61, a pensioner.

He compared the landing to "a porcelain egg under a hen . . . that's about it, in a nutshell."

William Webb
Times photos by Art Rogers

the BROAD

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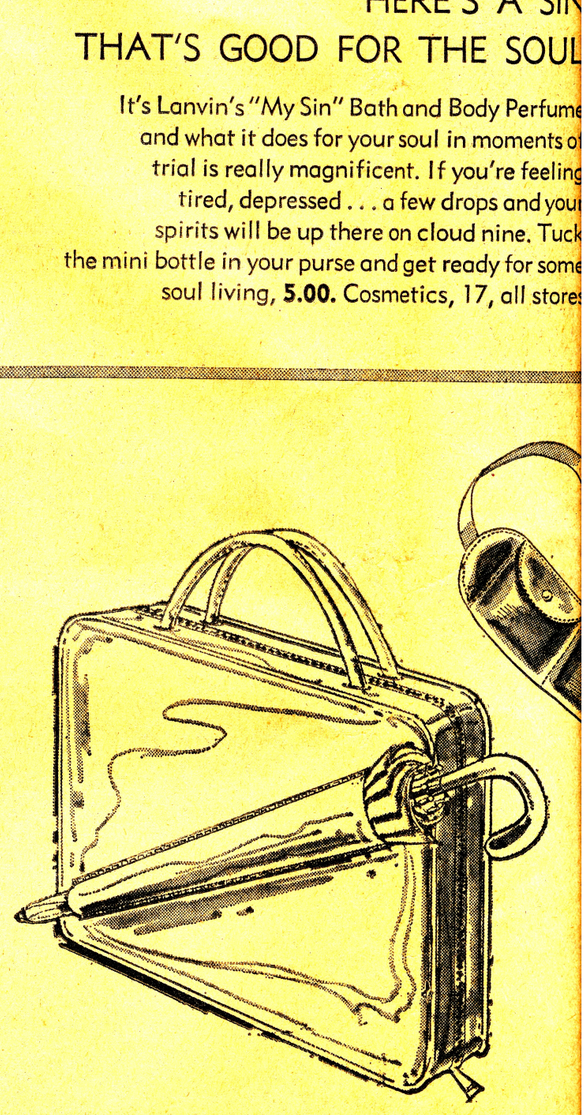

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'One Giant Leap for Mankind...'

Neil A. Armstrong

Edwin E. Aldrin Jr.

(AP) Wirephotos

Continued from First Page

lunar environment, as they moved around with ease, flung their arms and legs and jumped as if in happiness but actually in tests of mobility.

At one juncture Aldrin reported, "I was about to lose my balance in one direction but recovery is quite natural."

Early in the moon walk there was not too much description of the landing scene itself except Armstrong's note: "It's different, but beautiful."

While Aldrin worked at an equipment bay in the module's lower stage, removing tools and rock-boxes, Armstrong moved out to one side of the lander, perhaps 60 or 70 feet, then aimed the camera in a series of panoramic views of the area.

Desolation Shown

The scenes showed clearly the utter desolation of the moon—the rough, scarred terrain, in what appeared to be scores of small craters. The pictures showed a couple of elongated craters, and in the distance small rocks.

Once he had fixed the camera on a tripod, Armstrong moved back to center stage where Aldrin was busy mounting a solar wind detector, something like a windowblind to catch particles of the solar wind for return to earth.

Over and over again, the explorers noted the cohesiveness of the moon's soil.

From early moments of their explorations, physicians in Mission Control reported the pilots remained in excellent physical condition.

No Indications

There were no indications in their voices that they were excited, confused or fatigued by the physical and emotional experience.

Aldrin said his blue lunar overshoes had turned to a grayish cocoa color after his striding about for a time in the lunar dust.

Forty-five minutes after Armstrong stepped down from the ladder onto the surface, the two pilots planted the American Flag just in front of the lander.

The Flag was carried to the moon in a container along side the ladder. Mounted on an eight foot staff, it was held out by a spring, making it look almost as though it were in a stiff breeze.

Neither Comments

The symbolic Flag raising was done without fanfare. Neither of the astronauts commented when the Stars and Stripes were raised over the Sea of Tranquility.

Viewers could see the white-suited astronauts becoming more and more at home in the light lunar gravity.

At times, they almost seemed to lope about in their stiff suits with bulky backpacks. Shoulders hunched, they looked like linebackers moving about.

And at times they bounded about in what astronauts called the "Kangaroo hop." Aldrin, a former football player, looked like a broken field runner.

"It could get rather tiring," Aldrin said, moving too briskly. But he observed this might be caused by the stiffness of the pressurized suits.

At 8:50 p.m. President Nixon called from the Oval Room of the White House.

He said it was the most historic telephone call in all mankind and told the astronauts, "I can't tell you how proud we all are . . . for every American this has been the proudest day of our lives. Because of what you have done the heavens have become a part of man's world. As you talk to us from the Sea of Tranquility it inspires us to redouble our efforts to bring peace and tranquility to earth."

"Thank you, Mr. President," Armstrong replied, "it's a great honor and a privilege for us to be here representing not only the United States, but peaceable nations, and with interest and a curiosity and anticipation for the future. It's an honor for us to be able to participate here today."

Thanks Pair

"And thank you very much," Mr. Nixon replied, "and all of us look forward to seeing you on the Hornet on Thursday."

"We look forward to that very much, sir," Armstrong said.

Shortly after the conversation with the President, Armstrong began shoveling bulk samples of dust and rock into the two rock boxes to be returned to earth for scientific analysis.

Through most of the expedition, the heart rates for the pilots ranged between 90 and 100 beats per minute. This was less than the heart rate Armstrong experienced when they were launched toward the moon from Cape Kennedy last Wednesday.

Aldrin, who has a doctorate from Massachusetts Institute of Technology, told Houston he thought it was particularly interesting that when he picked up particles from the moon surface, they seemed to all go in the same direction with the same velocity, no matter what their size. He attributed the phenomenon to the fact the moon has no atmosphere.

Holds Scale

As Armstrong filled the bag with the bulk sample, he held a scale so he could weigh what he was preparing to bring home.

At the same time, Aldrin worked his way around the lunar module, inspecting it, taking pictures of its flat feet settling into the soil.

It appeared the area where Eagle touched down was almost perfectly level. Stretching out to meet the black sky, the surface of the moon looked like a barren field or vacant lot, strewn with rubble, formless and forgotten.

By 9:15, Armstrong had completed packing and sealing the bulk samples in an airtight box.

Inspecting their landing vehicle, Armstrong and Aldrin reported they could see no damage as a result of the landing.

No Damage

The control thrusters on the side seemed in perfect condition, they said, and there was no evidence of fuel spillage or structural failure underneath. They seemed amazed at how little the 39-inch wide footpads had penetrated the surface.

After they completed their inspection of the spacecraft and collected and packaged the samples, they started to work setting up scientific experiments to be left behind on the moon, chatting casually about the best way to set up the instruments.

First, they deployed a device called a passive seismometer which will measure tremors in the moon's crust, helping scientists to determine definitely whether the moon is seismically active and to record the tremors which would be set off by the impact of large meteorites in the area of the moon near the landing site.
reflector to bounce back beams of laser light aimed at it from earth.

Distance Measure

By careful measurement of these reflected beams, scientists will be able to measure the moon's distance from the earth, its orbit, and the rate at which it is receiving from the earth much more precisely than they have ever been able to do before.

Such experiments may also confirm or discount the theory that the continents on earth are drifting apart. After a period of years, it may be possible to actually measure the rate at which the continents are drifting.

Throughout the excursion, Mission Control enjoyed flawless communication with the pilots walking around the surface. At times, it was difficult to determine which man was which as they moved about.

The explorers left behind messages from Presidents Eisenhower, Kennedy, Johnson, and Nixon along with leaders of 73 countries around the world. They also left tributes to five space explorers who lost their lives in man's reach for the moon.

Astronauts Named

They included U.S. astronauts Virgil I. (Gus) Grissom, Edward H. White II, and Roger B. Chaffee, who were killed in an Apollo fire in January 1967. The others were cosmonauts Yuri Gagarin, the first man to orbit the earth, who was killed in an airplane crash, and Vladimir Komarov, who died in a landing accident in the Russian Soyuz spacecraft.

Still inside the lunar module to be brought home with the moon explorers are two more large American flags, flags of the 50 states and the District of Columbia and U.S. territories, along with those of several other countries.

Early in the spacewalk both crewmen drew close to Eagle's forward landing strut where they uncovered a plaque bolted to the lander's lower stage which will be left on the moon.

Armstrong read from the plaque:

"Here men from the Planet Earth first set foot upon the moon, July 1969, A.D. We came in peace for all mankind."

On the plaque were engraved the names of the Apollo 11 crew, Armstrong, Aldrin and Collins, and President Nixon.

Aldrin was first to return to the Eagle cabin. He hopped up the ladder like an athlete, three rungs at a time, and disappered off the front porch at 10 p.m. PDT.

For ten minutes he assisted Armstrong, who remained on the surface to haul rock sample boxes into the cabin with aid of a continuous conveyor belt.

The Apollo 11 command climbed the ladder and crawled into the hatch at 10:11 p.m.

The astounding performance of the two crewmen is not expected to change the remaining time line of the mission. Eagle is scheduled to blast off from the moon just before 11 a.m. PDT today.

The moon walk, originally scheduled for 10 hours after the landing on the surface at 1:17 p.m. PDT, had been moved up more than three hours.

Not until several minutes after the landing did the world realize how terrifying the last moments of the descent from space had been.

As the landing ship leveled out over the tortured face of the moon, Armstrong had to take control away from its computer to avoid going down into an ugly boulder-strewn crater where it could have easily crashed.

Several minutes after the historic touchdown, Armstrong told Mission Control matter-of-factly:

"The auto-targeting was taking us right into a football field-sized crater with a huge number of thick boulders and rocks for about one or two diameters around it.

"It required us . . . to fly manually over the rock fields to find a reasonably good area."

Neither Armstrong nor Aldrin so much as mentioned the scary situation as they made their final descent, calling out their speed and altitude as they went down.

Orbiting the moon in the Apollo command ship Columbia, Collins listened to the conversations between the desdending landing vehicle and earth.

Several times, when there were momentary interruptions in communications, Collins relayed instructions from Houston to Armstrong and Aldrin on the way down.

Also circling the moon—over the equator—was the Soviet spacecraft Luna 15, which reached the vicinity of the moon two days ahead of the American astronauts on an unexplained mission.

Armstrong and Aldrin, after the landing, peered through the slanted windows of the lunar module and saw a landscape even more impressive and frightening than thousands of closeup moon pictures have been able to show.

"It looks like a collection of about every variety of shapes, angularity, granularity, and every variety of rock you can find," Aldrin reported.

Armstrong Reports

The first dramatic words from the lunar surface came at 1:18 p.m. PDT, when Armstrong gave a calm but proud report to Mission Control at the end of a 12-minute heart-stopping landing operation:

"Tranquility Base . . . the Eagle has landed!"

Armstrong reported: "The one-sixth G (the force of lunar gravity is but one-sixth that of earth) is just like in an airplane . . . I don't think we notice any difficulty at all in adapting to one-sixth G. It seems immediately natural to move in this environment."

The spacecraft commander also acknowledged somewhat ruefully: "The guys who bet we wouldn't be able to tell precisely where we are are the winners today. We were a little bit busy worrying about program alarms and things like that in the part of our descent where we normally would have been picking out a landing site."

The tension in Mission Control during the landing phase mounted minute by minute as the long descent burn bounced man-made thunder across the face of the moon.

And the first words from capsule communicator Charles M. Duke Jr., once Armstrong reported that "the Eagle has landed," told the story:

"We copy. You are on the ground. You've got a bunch of guys here about to turn blue. We're breathing again. Thanks a lot."

A little later Duke spoke of the Eagle crew's "fantastic job" and told the moon men: "Be advised there are a lot of smiling faces down here and all over the world."

"There are two of them up here, too," Aldrin answered.

"And don't forget the one in the command module," chimed in Collins from the orbiting Columbia.

The litany of the landing, with Aldrin calling out decreasing altitude speeds as Eagle settled toward the moon heightened the tension of the approach.

Quick and apparently unemotional, it nevertheless showed the strain on the two men. As the approach moved down from 50,000 feet, where the descent engine was ignited, reports came faster and were more and more clipped.

With Eagle flying backward—feet first—and the crewmen also riding backward and prone, the radio crackled with communications between the spacecraft and Mission Control.

"Position checks downrange show us to be a little off . . ."

"At four minutes, Eagle you are go to continue powered descent.

"We got the earth right out of our front window."

"She's coming down beautifully!"

"Better than the simulator."

"Velocity 1,200 feet per second, altitude 21,000."

"Eagle, you are looking great!"

'Go for a Landing'

"Altitude 4,000 feet. You are go for a landing."

"Rog, understand, we are go for a landing."

"Two thousand feet, 2,000 feet. We're go! Sit tight!"

"Four hundred feet . . . 300 feet . . . 200 . . . 100.

"Forty feet—we're picking up some dust . . ."

"Thirty-five feet . . . we're drifting to the right a little.

"Contact light! . . . Engine stop."

Final preparations for the dramatc descent from orbit had begun at 6:27 a.m. PDT when Aldrin, wearing only a flight suit, crawled through the short tunnel connecting Eagle to Columbia and started a last check of the lander's system. Armstrong followed an hour later, wearing his spacesuit, and picked up Eagle's checklist routine while Aldrin made his way back through the tunnel to Columbia to put on his spacesuit and return.

A dozen latches joining Columbia and Eagle were released at 10:47 a.m. just before the two spacecraft rounded the eastern limb of the moon into communications view of the earth.

The two ships continued to cruise close together, however, with Collins in Columbia checking the lunar module carefully, particularly its extended landing legs.

Eagle continued on course halfway around the moon—with the command ship about 2.2 nautical miles distant — to a point above the hidden side where the lander's descent engine was fired for the first time to head for the surface at 12:08 p.m. PDT.

Called descent orbit insertion (DOI) this burn slowed the lunar module into what is called a transfer orbit, an arc of about 180 degrees to the front side of the moon that shifted Eagle into a new orbit with a low point of 50,000 feet.

After the burn, the landing craft coasted through the 47-minute descent trajectory—again hooking halfway around the moon.

As Eagle moved off the Sea of Fertility and over the Sea of Tranquility, the descent engine ignited again at 1:06 p.m. PDT under control of Eagle's automatic guidance and navigation system.

At this point—powered descent initiation (PDI)—began for the longest 12 minutes in spaceflight history, with the descent engine burning continuously starting at 9,850 pounds of thrust, to ease Eagle toward the landing site 260 nautical miles ahead.

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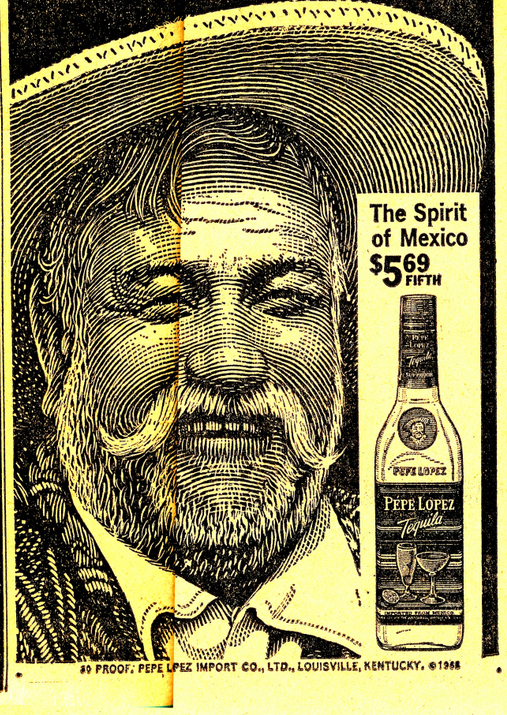

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Clergymen Ask God's Blessing on Astronauts

BY DAN L. THRAPP
Times Religion Editor

Clergymen of many faiths called Sunday for God's blessing on America's three astronauts.

"Today is one of the great dates of history, one that school children of the future will memorize along with 1492," said Dr. J. Irwin Trotter, Methodist district superintendent.

James Francis Cardinal McIntyre suggested a special prayer to be said at all Masses Sunday in the Los Angeles archdiocese:

"That You guide our heroic astronauts as they follow the pathway which Your divine intelligence has impressed in the laws of the universe and in the firmament of the heavens which they are traveling and bring them home to us in safety and wisdom."

Numerous clergymen made mention of the spectacular feat of landing two men on the moon, more or less in terms of the sermon title of Dr. Lloyd R. Gillmett, dean of St. Paul's Episcopal Cathedral:

"What hath God wrought?"

At many churches the text of the 8th Psalm was read: "When I look at Thy heavens, the work of Thy fingers, the moon and the stars which Thou hast established . . ."

Asks Inspiration

The Rev. F. Harold Essert at Westwood Methodist Church, in his pastoral prayer, requested that God "grant that from their action we may take increased inspiration to solve our problems here on earth," and he spoke for many.

Dr. Trotter, speaking at the same church, paid tribute to the heroism of the three astronauts, and the technological skill which sent them to the moon so smoothly, but he warned lest man's growing ingenuity and competence lessen his dependence upon faith.

He mentioned that Pravda, the Soviet newspaper, had warned that "nature will have her sacrifices," and conceded the possibility but pointed out that "even if disaster were to overtake them, God still reigns—on the moon as on earth."

He said that the role of faith in the past often had been to help man overcome nature, or fight off evil, or face danger bravely, all obstacles which his technology had helped him overcome by himself.

"What is the role of faith in a day like today?" he asked. "I suggest it affirms new freedom, in our spiritual lives and our material world."

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Reg. 5.99 Full Quart **5.39, 3/15.99**
100% Imported Scotch Whisky. Light and distinctive flavor. Distilled, blended in Scotland.
Case of 12—**61.10**

SERENADA TEQUILA
Reg. 5.99 Full Quart **5.39, 3/15.99**
Truly dry tequila, refined to crystal clearness.
Case of 12—**61.10**

DELAGE SPANISH BRANDY
Reg. 5.99 Fifth **4.99**
Rare imported brandy, soft, delicate.
Case of 12—**59.88**

Gourmet, 845, all stores except Wilshire, Westchester, Grossmont and San Diego.

HALF GALLONS ON SALE...

OLD CROW Kentucky Straight
Reg. 12.89 Half Gallon **11.49**
A truly great American whiskey.

I. W. HARPER Kentucky Straight
Reg. 14.99 Half Gallon **12.99**
The prized Kentucky bourbon, 6 years old.

OLD J.T.S. BROWN Kentucky Straight
Special value — **10.98**
10 years old, 86 proof. Bottled in Kentucky.

CAMERON-HEDGES Scotch
17.38* Half Gallon **14.98**
Light and mellow. Distilled, bottled in Scotland.

DEWARS WHITE LABEL Scotch
18.70* Half Gallon **15.99**
"The pride of Scotland", very smooth, 86 prf.

TANQUERAY Imported Gin
Reg. 14.69 **12.99**
94.6 proof. England's finest, distinctively dry.

FLEISCHMANN'S Gin
10.58* Half Gallon **9.99**
90 proof well-balanced, dry and delightful.

GILBEY'S Vodka
Reg. 9.95 Half Gallon **8.99**
Great name. Crystal clear, sublimely smooth.

GORDON'S Vodka
9.78* Half Gallon **8.99**
Smoothest, clearest, most mixable vodka.

Save an additional 10%.
Mix or match 6 or more half gallons.
*2 at prices. In case of printing error, the minimum consumer price will prevail.
Not all prices or items in our Las Vegas or Bakersfield stores.

RARE WINES ON SALE

Values to 3.99 each Fifth **2.98** each **4/9.99**

CHATEAU PICHON LONGUEVILLE BARON (Pauillac)
A great long-lived, round wine totally worthy of its recognition. Vintage '63.

CHATEAU LEOVILLE LAS CASES (St. Julien)
Justly celebrated vineyard, fine textured delicate claret. Classified growth. Vintage '63.

CHATEAU LIVERSAN (Haut Medoc)
Full bodied, smooth, beautiful color. For the most discriminating table. Vintage '64.

LA FIOLE CHATEAUNEUF-DU-PAPE (Rhone)
Sturdy, warm. Unique antiqued bottle. 1964.

KIRSCHNER PIESPORTER GOLDTROPFCHEN (Spatlese)
A delicate wine of late picked grapes (Spatlese), for extra richness.

GOURMET DELIGHTS

GIANT ENGLISH COOKIE TIN
Reg. 4.98 4 lb. **2.99**
Delicious imported pastries and cookies in the finest British tradition. In gift tin—very special.

CONTINENTAL Cookie Assortment
Reg. 2.29 2 lb. **1.29**
Many delicious varieties; fancy cupped for gracious serving.

IMPORTED CAVIAR
Large grained Danish Caviar. 1¾ oz. **3/1.00**

LAMBS Imported PRESERVES
16-oz. **.49, 2/.79**
From Scotland—delicious fresh fruit preserves —8 flavors.

IMPORTED CORNED BEEF 3 lb. **2.98**
Premium corned beef from the Argentine estates of Bovril, Ltd. Vacuum packed.

VIVE LES WINES IMPORTED FROM FRANCE

ANDRE DURAND Appellation Controlee
Reg. 1.98 Fifth **1.59** Assort a case **17.17**
Beaujolais—Fruity, full-bodied red wine.
Pinot Noir—Ruby red, rich in flavor
Pinot Chardonnay—Attractive bouquet, soft white wine.
Anjou Rose—Pure crisply dry and mild.
Chateauneuf-du-Pape—sturdy red wine, full-bodied and generous.

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